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time there does not appear to be any good reason for separating from the system the Gulf Stream, as is done by Dr. Carpenter." Prof. Dana also seems to agree with Croll as to the thermal work of the Gulf Stream.

New Carboniferous Spider.—Mr. Woodward describes, as stated in "Nature," from the Dudley coal field, a Phrynus-like spider which he named *Eophrynus Prestvicii.* A fossil Lycosa-like spider had previously been found, also a Phalangium-like species from the same formation. The present animal represents a third group of Arachnids which lived during the Coal period.

Singular Albino.—The Museum of the Agricultural Department at Washington, contains an "albino" Bob-o'-link (*Dolichonyx oryzivorus*), shot in that vicinity, illustrating a rare and curious condition. It is of a uniform clear pale *yellow*, exactly like a canary-bird.—Elliott Coues.

MICROSCOPY.

Proceedings of the Section of Microscopy of the Boston Society of Natural History, Oct. 11, 1871.—Mr. Greenleaf stated in reference to the living Amœbæ shown at the last meeting, that he had not found the slightest trace of any return movement in those organisms. He had seen a central forward current, but never the two return side currents, so often described. He considered these merely optical.

Mr. Stodder said he had tried collecting germs from the atmosphere. He had always found great difficulty in obtaining microscopically pure distilled water. This last summer he had used a glass vessel filled with ice, on which the moisture of the air condensed outside. In this manner nothing not in the air was obtained. In his examinations he had followed the method given by Dr. Maddox in the Feb. (1871) number of the "Monthly Microscopical Journal."

He first placed his germs in molasses, but subsequent examinations showed that this contained germs of its own. He next took pure crystals of sugar dissolved in the water collected, and placed on a slide. To keep the moisture present he had used the method given by Dr. Maddox.

His first collection, made Aug. 11, developed in a few weeks sphores, mycelium, and spores of fungi in great abundance. Other collections of the same date have as yet developed but little life. He had found that in these experiments no animal life was developed.

Mr. Greenleaf showed a slide with a small hole drilled in the centre. By resting the slide on the edge of a shallow tray containing water, so that the hole shall be below the water level, we have a self-supplying water cell, which is completed by placing a thin glass cover over the hole.

Mr. Stodder said, "Dr. Woodward has, I think, carried microphotography to greater perfection than any one else. I have here several photographs of great beauty, delicacy and accuracy, taken with high powers and of very difficult objects." He then showed the following: *Amhipleura pellucida*, with Powell and Lealand's so called $\frac{1}{16}$, a Tolles' $\frac{1}{15}$ and $\frac{1}{10}$ and another $\frac{1}{10}$, and Powell and Lealand's $\frac{1}{8}$, and with a Tolles' $\frac{1}{6}$, all immersion lenses, and all magnified to nearly 1000 diam. Also positives on glass of the same objects with Tolles' $\frac{1}{6}$ 920 diam. with eye-piece and 256 without. All these show the transverse striæ distinctly. Also *Stauroneis Stodderi* Greenleaf 1000 diam. and 3750 diam. and *S. Baileyi* with Powell and Lealand's $\frac{1}{16} = 3000$ diam.

Mr. Bicknell spoke of the difficulty of using the microscope vertically, a position which is often necessary in such work as observing living animals in fluid, picking out Foraminiferæ from sand, etc. He had obviated this difficulty by using an ordinary Nachêt camera lucida. By placing the camera on the eye-piece in the usual manner, and looking into the *underside* of the camera, at an angle of about 30° from the horizontal, a perfect view of the objects on the stage of the microscope is obtained. The position is thus very easy and entirely free from the usual constraint attending the use of the microscope when in a vertical position.

Mr. Bicknell also exhibited an achromatic condenser, made in the form of an eye-piece. Dr. Beale in "How to work with the Microscope" has recommended the use of the Kellner eye-piece as a condenser, and says "by stopping off the greater part of the light passing through the condenser, by placing over the upper lens a thin plate with a very small central hole, a great advantage results in working with high powers." In the condenser shown by Mr. Bicknell the amount and direction of the light is controlled by a revolving diaphragm placed between the lenses in the place where the diaphragm is usually placed in an eye-piece. There are three holes of different sizes for direct light, one hole with a central stop for dark field, which gives an admirable effect with objectives under 30°; and two oval openings, and one oblong opening especially for the binocular. The oval openings are opposite each other and are in use at the same time, giving two oblique pencils of light, converging to a point, and which are very useful for the binocular. This condenser was used with various objectives from $1\frac{1}{2}$ inch to a $\frac{1}{50}$ of an inch, giving ample light for the latter with the highest eye-pieces.

Mr. Bicknell stated that with this condenser and a $\frac{1}{5}$ of only 100° aperture, he had seen the same test object which had required a $\frac{1}{10}$ or a $\frac{1}{12}$ of 150° when used without it.

THE STATE MICROSCOPICAL SOCIETY of Illinois has issued a prospectus of "The Lens," a Quarterly Journal of Microscopy and the Allied Natural Sciences: with the Transactions of the State Microscopical Society of Illinois; the first number to appear on the first of October. It will be an octavo, each number containing at least forty-eight pages of reading matter. Terms, two dollars per annum in advance. Address Charles Adams, Secretary of the Publishing Committee, 1000 Michigan Avenue, Chicago, or the the Editor, S. A. Briggs, 177 Calumet Avenue, Chicago. Though its appearance has been delayed by the fire, we learn that it will soon be issued.

THE USE OF THE MICROSCOPE IN STUDYING THE EMBRYOLOGY OF THE SKULL.—His work had not direct reference to the subject of teleology, nor to the structure of the tissues; but his object had been to work out the metamorphosis of the skull, and to see the tissues as they begin to differentiate and modify to form the embryo. The subject was a very large one, and had been principally labored at by the great German embryologists. He had spent the last two years in studying the development of the frog's skull, in watching the different and numerous stages which that creature undergoes, and the relations it bears to other creatures of the vertebrate type, always remembering that the frog was essentially a fish. He had been in some degree unprepared for the extent of the metamorphic changes that the frog underwent. He had worked out this subject into ten artificial stages, the first of which he had obtained when the frog was in the egg. In the first stage of its morphological development the animal was two stages below the youngest *described* embryo of the lowest kind of fish, but one.

The larva of the lamprey was the earliest condition of a fish's skull with which we are acquainted. He had succeeded in getting two stages below the larva of the lamprey. From this stage he had worked up the development of the frog until he came to the tadpole, which is the representation of the types of rays and sharks. As he ascended in the various stages the likeness to the other vertebrata became very apparent. In an adult frog (*Rana temporaria*) he had obtained a metamorphic development of such height that it bordered upon our own class, the Mammalia. At the same time it should be stated that other parts of that frog's skull retained the simplicity of the adult lamprey. In the frog we had a creature who had run across the whole circle of types, creeping gradually up to the Mammalia and yet never losing his relation to the original type, but retaining its structure and relation to the very end, although subdividing and metamorphosing certain of the facial arches into the very number of parts that we have in our own inner ear. The chain of bones in the human ear (the hammer, the anvil, the round bone and the stirrup) had caused a great deal of trouble to anatomists in their attempts to trace the series of metamorphic changes. He had, however, made this clear by tracing the history of the facial bones of a frog, a creature which was but a fish in respect of its earliest embryonic conditions. Supposing the doctrine of development to be true, it would seem that we ourselves have come originally in some line sub-parallel to the frog (he would not say from the frog itself, although man had repeated the form tail-less). Even in the highest oviparous vertebrates no sub-division of a facial bar to form that tiny but really important part of the human skull, the *os orbiculare*, ever obtained. In this respect the frog comes nearer to the Mammalia than any bird. Birds have branched out in a direction quite away from the ordinary line, and have culminated in their own glorious types. If it is desired to trace the development of the Mammalia, inquiries must commence with the Batrachia, and in such inquiries the thought constantly occurs that between us and the Batrachia there have been lost whole groups of creatures. We were only just beginning to see the manner in which the work of tracing the development of the higher forms of animal life was to be carried on. —*From Address of H. W. Parker, before the Royal Microscopical Society, in the Monthly Microscopical Journal.*